

REMARKS

Claims 2-24 are active. Claims 14-24 are new. Claim 1 is canceled. Claims 1 (canceled), 4, 10, 13 are objected to based on formal matters. Claim 13 is rejected under 35 USC 101. Claims 1(canceled) -11 and 13 are rejected under 35 USC 102 as being anticipated by Drury '024. Claim 12 is rejected under 35 USC 103 as being unpatentable over Ezawa '839 and in view of Drury '024. The references cited in applicants' IDSs have been considered, Ezawa '839 being one of those cited. Applicants thank the Examiner for his efforts in considering the cited IDS references.

The Action states that the certified copy of the foreign application was not filed. Enclosed is a copy of a document available from the WIPO web site that shows that the certified copy of the priority document was filed with the International Bureau (IB) on 9/1/03. A call to the USPTO PCT help by the undersigned on Nov. 28, 2007 verified that the document was filed and was being scanned into the PTO system.

INFORMAL MATTERS

Certain of the claims have been amended to meet the objections to the formal matter issues. Others of the objected to terms are not amended as applicants traverse these objections as being in error.

Claims 1(canceled and replaced by claim 17) and 12:

The term "predominantly" is objected as being indefinite. The Action states that the specification does not provide a standard for ascertaining the requisite degree and that one of ordinary skill is not reasonably apprised of the scope of the invention. Applicants traverse this conclusion as not being accurate and misconstrues the term "predominantly." The claim clause (of canceled claim 1 and similar subject matter

present in claims 13, 17) in question is:

“a plurality of predominantly organic functional layers”

The term “predominantly” modifies the term “organic functional layers” of claim 1 and similar terms in claims 12, 3 and 17) and has a plain meaning of a majority of, or in other words, more than 50% of each layer is an organic functional material. Determining whether the organic functional layers of the claimed layers each comprise more than 50% organic material is a precise standard and can be readily measured by one of ordinary skill. The specification is not needed to give direction to one of ordinary skill how to do this.

A claim directed to a percentage value of a material is not indefinite. Countless patents have issued comprising claims directed to terms such as the values of claimed composition of materials containing, for example, x per cent of y material. See commonly owned US patent No. 7,298,023 for example and also see MPEP 2131.03 discussing overlapping ranges wherein the values are in terms of percentage of material compositions. These values are not objectionable per the MPEP.

The above claim term means there are a plurality of layers, i.e., more than one, that each layer comprises organic functional material, which organic functional material comprises more than 50% (predominantly) of a layer. Thus it should be plain that the scope of the claim can readily be determined by one of ordinary skill by merely determining the percentage of the amount of organic material in a given layer which is readily determinable.

In the case of claims 12, 13 and 17, it is the organic material or equivalent material that forms the majority of the material of each of the plurality of layers. One of

ordinary skill would have no problem in determining the percentage of organic or equivalent material in each such layer and thus would be able to determine if the layers meet the claim requirement. This basis of the rejection should be withdrawn.

Claims 4 and 10 – “and/or” This term is deleted from claim 10, but is retained in claim 4. This term is not indefinite or objectionable. It merely means that one or the other or both of the alternatives are in the claimed structure. The Action states it is not clear if the limitations following the phrase are part of the claimed invention. Of course such limitations following this term are part of the claimed invention. There should be no reasonable doubt about this, the term means in an alternative manner such either or both limitations may be in the claimed structure.

For example, claim 4 calls for:

wherein at least one of the central functional layer and the non-conducting material includes an insulating material selected from the group consisting of polyhydroxystyrene, polymethylmethacrylate and/or polystyrene and/or a semiconducting material including polyalkylthiophene and/or polyfluorene and/or a mixture thereof

This is not indefinite. This is merely a more concise way of presenting the named groups. The term “and/or” as would reasonably construed by one of ordinary skill means:

1. One of the central functional layer and the non-conducting material includes an insulating material.

2. That the insulating material is selected from the group consisting of any of the following alternatives by way of example only (not all alternatives are named):

- a. polyhydroxystyrene, polymethylmethacrylate and polystyrene and a semiconducting material including polyalkylthiophene and polyfluorene or a mixture

thereof

b. polyhydroxystyrene, polymethylmethacrylate and polystyrene and a semiconducting material including polyalkylthiophene or polyfluorene and a mixture thereof

c. polyhydroxystyrene, polymethylmethacrylate and polystyrene and a semiconducting material including polyalkylthiophene or polyfluorene or a mixture thereof

d. polyhydroxystyrene, polymethylmethacrylate and polystyrene or a semiconducting material including polyalkylthiophene and polyfluorene and a mixture thereof

e. polyhydroxystyrene, polymethylmethacrylate and polystyrene or a semiconducting material including polyalkylthiophene and polyfluorene or a mixture thereof

f. polyhydroxystyrene, polymethylmethacrylate or polystyrene or a semiconducting material including polyalkylthiophene or polyfluorene and a mixture thereof

g. polyhydroxystyrene, polymethylmethacrylate or polystyrene or a semiconducting material including polyalkylthiophene or polyfluorene or a mixture thereof

h. polyhydroxystyrene, polymethylmethacrylate or polystyrene or a semiconducting material including polyalkylthiophene and polyfluorene and a mixture thereof

Plainly the Markush groups claimed are permissible groups and thus there is

nothing indefinite about grouping the different groups as claimed. This format is permitted as the groupings are plainly evident. This objection should be withdrawn.

As to claim 10, this claim is amended as the “and/or” term is superfluous and thus is deleted, rather than being indefinite. The traces are detectable by at least one of the named descriptions and the term “and/or” does not add anything. Whether the term “and” or the term “or” is used, the meaning of the claim is the same. That is, prior to or after application of the central functional layer, the disruption element is detectable by at least one of the shape of the disruption element and detectable by traces on the at least one lower functional layer or detectable by the shape of the disruption element or by detection of traces. This term is not indefinite. In any case the objected to term is deleted and this issue is moot as to this claim.

Claim 13 is amended to meet the formality rejection. Applicants believe this objection is met as this claim now calls positively calls for an electronic product with the objected to term deleted. The rejections based on formal matters are believed overcome and should be withdrawn.

The substantive rejections

New claim 17

This claim replaces canceled claim 1 and calls for:

at least one through plating having a truncated conical cross-sectional profile which extends from the lower layer through at least the central layer transversely to the central layer (underlining added)

This claim structure is not shown, suggested or otherwise disclosed by Drury '024. No product by process term is present. '024 discloses a vertical interconnect area 104 in a laminate comprising a stack 10 of areas 3-6. A tapered tool tip 20 has a radius 21 at

angle 22, Fig. 4, (col. 4, line 58-col. 5, line 18) forming a notch. Since the tool tip 20 is tapered and has a curve formed by a radius 21 (col. 5, line 6), the interconnect area by definition must be conical, i.e., a cone. See Fig. 2 wherein the plan view of the interconnect area is circular. Obviously a circular in section tapered region defines a cone.

The claim calls for a truncated cone which is not shown or disclose or otherwise described by Drury. A truncated cone also known as a frustum, does not have a pointed tapered tip wherein the cone is cut between the cone's flat bottom surface and the cone's pointed tip to form a trapezoid in section.

As Drury shows in Fig. 4, the cross section of interconnect area 104 is triangular and not trapezoidal and thus does not define a truncated cone as claimed. This reference is foreign to claim 1 amended. Ezawa is cumulative with Drury. See Ezawa Fig. 1 (prior art) and Figs. 2-5, and 9-11, which also manifest conical sections of the conical pillar 11, which too is not a truncated cone as claimed. Claim 17 is believed allowable over these references.

Claim 12

Independent process claim 12 calls for:

forming a plurality of layers, a majority of which layers are of predominantly organic material and include an insulating layer, the forming of a first lower layer being followed by forming subsequent layers deposited sequentially on the first layer, the forming of the first layer including forming a disruption element on the first layer which element is arranged to result in a void in at least a first portion of the subsequently deposited layers, and then forming a through plating in the resulting void wherein at least the portion of layers are ohmically intercoupled by the through plating (underlining added)

This claim is not suggested, disclosed or otherwise shown by Drury or Ezawa,

who do not disclose, suggest or otherwise show formation of the underlined claimed disruption element. This element is an element which results in a void in the layers applied subsequently to the element. See the specification, page 6, lines 10-22. The void may be caused by the element in one embodiment wherein a material is applied that prevents wetting of the lower layer by the applied upper layers, page 5, lines 26-29, applicants' specification and thus the upper layers are not deposited on the lower layer in this disruption region. The non-wetting can also result in an alteration of the applied layer thereto in that the applied film tears open, page 6, lines 10-11, or the shape of the disruption promotes tearing open the film, page 6, line 14, and thus results in a void above the disruption. The disruption can be a chemical or physical treatment, specification page 5, lines 20-22, or page 6, lines 14-22, and is missing in the cited references.

The void produced over the lower layer is, in certain embodiments, a result of the non-wetting of the later applied layers onto the disruption and which non-wetting results in the lower layer being exposed. In another embodiment the upper applied layer does not adhere to the lower layer due to a physical treatment of the lower layer. The lower layer does not receive an upper layer and thus is exposed. The exposed lower layer in this embodiment then receives the through plating or via which is an electrically conductive interconnect conductor material placed in the void in the later applied layers caused by the disruption element. This is different than Drury, which, as asserted in the Action, discloses a discontinuity in a layer due to the mechanical impression caused by the later impacting of a tool into of the layers and Ezawa, which discloses building up of the interconnection pillar first in a different way not using a disruption at a lower layer

and does not produce a resulting void in later deposited layers as claimed. Claim 12 is believed allowable.

Claim 13

This is a product claim and calls for similar subject matter as in method claim 12, and includes a disruption element not suggested or shown by the cited references.

Claim 13 calls for:

- a disruption element on a portion of the first layer over a given region of the first layer;
- a plurality of layers on the first layer and overlying the disruption element on the first layer, at least a portion of which plurality of layers comprise predominantly organic material, at least a first portion of the plurality of layers on the first layer comprises predominantly organic material;
- the disruption element being arranged to result in a void in second portion of the plurality of layers in the area above the disruption element

The Action compares the disruption to the tool impact created discontinuity in Drury lower layer. A discontinuity caused by a tool impact is not a disruption element as claimed. The plain meaning of the term "disruption" should be used. See MPEP 2111. Drury discloses a discontinuity in a layer caused by a later applied impacting tool which is not a disruption element as claimed in view of applicants' specification. An element is a positive structure. The Drury discontinuity is not a disruption element. A discontinuity caused by an impacted tool is not such an element. It is a hole created by a tool and does not meet the plain meaning of the term as would be understood by one of ordinary skill in the art in view of applicants' specification. The principles regarding the disruption element discussed in connection with claim 12 are applicable to these claims. The disruption element is a positively claimed structure and is missing in the cited references.

MPEP 2111.01 requires that the plain meaning of the term be used in light of the specification. The plain meaning as construed must not be inconsistent with the specification. See *In re Zletz* cited by the MPEP Section I, page 2100-38. A disruption element by its description causes disruption of something. A discontinuity may be construed as a disruption in a layer, but this interpretation is not consistent with applicants' specification because the specification requires the disruption to cause an effect in a later applied layer. The discontinuity of Drury does not cause a disruption in something else as described in applicants' specification. The Drury reference discontinuity is not such an element, it is a passive opening in a layer created by the force of a tool and Drury does not use it to disrupt a later applied layer which is inconsistent with applicants' specification. Claims are not read in a vacuum.

The disruption element is arranged (a structural limitation) to result in a void in a second portion of the layers (a structural limitation in the layers) above the element. This is not true in Drury since the discontinuity in the lower layer is formed by the tool and no void is formed by that discontinuity in the layers above that lower layer, but rather by the tool which deforms the interconnection into the various layers which never exhibit a void prior to the application of the tool. This claim limitation is not a process limitation in that the claim is directed to the structure of the element that results in the void in the overlying layers. The resulting void is structural because it exists in the layers and corresponds to (is aligned therewith) the disruption element.

In Drury, any voids in the layers above the lower layers is a result of impact of a tool and not due to the discontinuity in the lower layer also caused by the tool impact. The voids as claimed are structural as they can be examined for characteristics as to

how they were formed by examining the adjacent layer material exhibiting a void. That is microscopic examination of the edges of the voids will reveal how they were formed, i.e., by non-wetting of the layer on the lower layer as it is applied to the lower layer etc. The edges of the so called void in Drury if examined in a similar manner, would show different edges produced by impact deformation, i.e., deformation, and thus a different structure than the layers of the claimed component, which would exhibit no such impact deformation. This claim is believed allowable for these reasons.

The remaining claims depend from the independent claims, include all of the structure therein and are believed allowable at least for these reasons in addition to the structure not shown or suggested in the cited references.

Claims 6-7 specifically describe different disruption elements. The Action asserts that prior claims 6-7 are directed to a process regarding a chemical treatment. This conclusion is not correct. The so called chemical treatment is directed to the characteristic, property or composition of the material, e.g., a disruption element, and thus is not a process limitation. A characteristic, property or composition of an element exhibited by the element is structural and not a process limitation. A chemical treatment is a noun, not a verb, and thus refers to a chemical composition of the material that is plainly structural and not a process.

In amended claim 6, the lower layer cross section profile manifests a chemical treatment. This is not a process limitation. This claim means that the structure of the layer exhibits exposure to a chemical treatment, it has a certain composition, and this composition is one that results in a function, as described in the specification for example. That function is to preclude wetting in that region by a later applied layer to

create a void for example in the later applied layer. That chemical treatment is observable in that layer. Since the references are missing the chemical treatment, these claims are believed further allowable.

As to claim 9, the discussed limitation in the Action is also not a process limitation. This is not a product by process limitation. A change in surface energy is a property of a material and thus is structural. The claim is not requiring anything to be done in a process step. The claim is directed to a property exhibited by the material. A property should not be characterized as a product by process limitation because they relate to different concepts. This claim is believed further allowable for this reason.

Amended claim 10 is also believed allowable as it too contains subject matter similar to several of the prior claims discussed above. The amendments to this claim are believed to make moot any assertion of a product by process limitation as asserted in the Action. The claim limitations are structural and not process limitations for similar reasons as discussed above in connection with others of the claims. The chemical applied, which forms a disruption element, is detectable and the cited references are foreign to this claim, which is believed allowable.

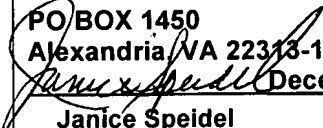
Since applicants have shown claims 2-23 to be in proper form for allowance, such action is respectfully requested.

Enclosed is a separate letter showing that there is no fee due for the added claims. Certain of the multiple dependent claims and independent claims are eliminated so that the total number of claims is now less than the total number of claims previously paid for and the three present independent claims have also been previously been paid for..

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